STATE OF IOWA

BEFORE THE IOWA UTILITIES BOARD

IN RE: **INTERSTATE POWER AND LIGHT COMPANY**	**DOCKET NO. EEP-2012-0001**

REPORT ON INTERRUPTIONS AND CYCLING EVENTS

Interstate Power and Light Company (IPL) submits this 2016 Annual Report of Interruptible and Cycling Program Summer Season Events pursuant to the direction of the Iowa Utilities Board (Board) and guidance from Board staff in Docket No. EEP-02-38 (May 15, 2006 Order); Docket No. EEP-08-1 (June 24, 2009 Order); Docket No. EEP-2012-0001 (December 3, 2013 Order).

In compliance with these directives, IPL submits its 2016 Annual Report of Interruptible and Cycling Program Summer Season Events.

WHEREFORE, IPL respectfully requests that the Board accept IPL's 2016 Annual Report of Interruptible and Cycling Program Summer Season Events in compliance with the directives of the Board. IPL representatives are available to meet with the Board to answer questions or to provide additional information as needed.

Dated this 25th day of October, 2016.

Respectfully submitted,

INTERSTATE POWER AND LIGHT COMPANY

By: */s/ Andrew C. Hanson*
Andrew C. Hanson
Senior Attorney
Alliant Energy Corporate Services, Inc
4902 N. Biltmore Lane
Madison, WI 53718
(608) 458-6223
andrewhanson@alliantenergy.com

2016 ANNUAL REPORT

OF

INTERRUPTIBLE AND CYCLING PROGRAM SUMMER SEASON EVENTS

BY

INTERSTATE POWER AND LIGHT COMPANY

IN

DOCKET NO. EEP-2012-0001

October 25, 2016

TABLE OF CONTENTS

2016 ANNUAL REPORT
OF
INTERRUPTIBLE AND CYCLING PROGRAM SUMMER SEASON EVENTS

A. INTRODUCTION

Interstate Power and Light Company (IPL) submits this report pursuant to the Iowa Utilities Board's (Board) direction provided in Docket Nos. EEP-02-38, EEP-08-1 and EEP-2012-0001.

On page 15 of its May 15, 2006 Order Approving Settlement and Tariff and Requiring Additional Information (2006 Board Order) in Docket No. EEP-02-38, the Board directed IPL "…to file a report on or before November 1 of each year, beginning in 2006, detailing interruptions and cycling events for the prior summer,…." In its June 24, 2009 Order in Docket No. EEP-08-1 (2009 Order), the Board approved IPL's Energy Efficiency Plan for 2009-2013, which included interruptible and cycling programs. Board staff subsequently clarified in a July 7, 2009 meeting that IPL should continue to submit the November 1 annual report. Subsequently, in Docket No. EEP-2012-0001, the Board issued its Final Order on December 3, 2013 (2013 Order), approving IPL's new Energy Efficiency Plan for 2014-2018, which again includes interruptible and cycling programs. Board staff thereafter confirmed that IPL should continue to submit the November 1 annual report.[1]

IPL provides the information required under the 2013 Order in three sections below. In section B, IPL presents the 2016 summer interruptible program event details. In section C, IPL outlines its 2016 summer residential cycling (or load control) program event data. In section D, IPL replicates the 2016 actual Midcontinent Independent

[1] The decision rule was amended on January 28, 2010, to account for calculation methodology revisions of the margin reserve pursuant to IPL's regional transmission authority, MISO; however, that amendment bears no discernable impact on this report.

System Operator, Inc. (MISO) Locational Marginal Price (LMP) data from charts C-1 and C-2 of Exhibit 1 of the Non-Unanimous Partial Settlement Agreement and Joint Motion for Approval of Requests (Settlement) in Docket No. EEP-02-38, filed April 5, 2006. Finally, in section E, IPL offers its summary of and conclusions concerning the foregoing data. .

B. NONRESIDENTIAL INTERRUPTIBLE PROGRAM EVENT DETAILS

Pursuant to the terms of IPL's Settlement in Docket No. EEP-02-38, IPL implemented a revised interruptible tariff with revised Interruptible Program Decision Rules. This four-condition decision rule went into effect on June 16, 2006. (*See* Settlement, pp 3-5) IPL may call curtailment events on the basis of any of the four decision rules or conditions listed in IPL electric tariff rider INTSERV – Interruptible Service Option[2] as follows:

1. **Reliability**. Interruptions are necessary to maintain safe and reliable system operations and meet obligations to other interconnected systems;

2. **Energy Efficiency-Reducing Peak Demand**. Company would expect to experience less than planning reserve margin for the current year, where (i) planning reserve margin is defined as the amount by which capacity resources exceed Customer firm demand expressed as a percent of Customer firm demand, and (ii) Customer firm demand is defined as the load forecast of firm demand assuming normal (or 50-50) summer peak weather;

3. **Energy Efficiency-Reducing Energy Usage**. The day-ahead locational marginal price (LMP) for Company's load zone in the MISO footprint is at the "running

[2] The INTSERV rider also contains a buy-through provision, which allows a customer to remain in compliance with the interruptible program by paying the real-time LMP price per interruptible kW. The buy-through option is unavailable for Decision Rules 1 and 4 type events.

on oil" level for at least four consecutive hours or the rolling four-hour average real-time LMP for Company's load zone exceeds the "running on oil" level, where the "running on oil" level is a predetermined LMP defined by an assumed heat rate of 13.5 million Btu per MWH and a spot market price for No. 2 oil; or

4. **Program Quality Control**. Reasonable interruptions are necessary to test the capabilities of Customers. If there are no interruptions for conditions 1, 2 or 3 in a year by August 1, then Company will conduct a test interruption of all Customers. The test will be conducted by Company between August 1 and September 16 under circumstances as close as possible to a condition 2 or condition 3 interruption. Additionally, Company retains the prerogative to conduct a test of any Customer at any time of the year if it determines in its sound discretion that such a test is necessary to preserve the integrity of the program.[3]

Pursuant to the provisions of the Decision Rules, there were a total of two curtailment events during the 2016 summer season (running June 16, 2016, through September 15, 2016). Each participant in IPL's interruptible program was interrupted once during the season. All events were based on Decision Rule 2, Energy Efficiency – Reducing peak demand. Table 1 below displays the 2016 interruptible program events during the summer season.

[3] *See* footnote 2 above.

Table 1 – 2016 Interruptible Program Events

Curtailment Detail	Thu 07/21/16	Fri 07/22/16
Total Number of Enrolled Customers	171	171
Total Interruptible Load	271 MW	271 MW
Start Time	2 PM	2 PM
End Time	7 PM	6 PM
Decision Rule Condition[1]	2	2
Number of Customers Called	89	87
Buy Through Available?	Yes	Yes
Number of Customers Who Selected Buy Through[2]	9	11
Targeted Potential Reduction	116 MW	155 MW
Bought Through (less)	(28 MW)	(48 MW)
Curtailment Achieved[3]	88 MW	107 MW

[1] Decision Rule 1 = Reliability
Decision Rule 2 = Energy Efficiency-Reducing Peak Demand
Decision Rule 3 = Energy Efficiency-Reducing Energy Usage
Decision Rule 4 = Program Quality Control (system test)

[2] A customer can elect to buy through two events annually if ten or fewer curtailments and three events if more than ten curtailments are called, where the annual period is the load year starting May 1.

[3] Curtailment Achieved = Targeted Potential Reduction (MW) minus Bought Through (MW)

Table 2 below presents 2016 summer weather data for the time period May 15 through September 15.The table compares cooling-degree days at the Cedar Rapids, Iowa weather station for 2010 through 2016. As Table 2 illustrates, the summer of 2016 had 10 weekdays over 90 degrees, resulting in three days in which cycling events occurred (see Table 3 for more details) and two days in which industrial and commercial interruptions were called.

Table 2 – Weather Comparison, at the Eastern Iowa Airport, Cedar Rapids

Weather Parameters (May 15 – September 15)	2010	2011	2012	2013	2014	2015	2016	30-Year Average
Cooling Degree Days (base 70° F)	381	417	726	524	347	391	515	359
Days >= 90° F	2	14	33	15	1	13	15	n/a
Weekdays >= 90° F	2	13	27	12	0	6	10	10
Weekdays >= 95° F	0	2	12	6	0	0	0	n/a

Importantly, for the purposes of this analysis and as represented by Table 2 above, IPL employed a basis of 70 degrees for computing cooling degree days in lieu of a 65 degrees basis which may be more typically used in computing cooling degree days. IPL employs 70 degrees as its cooling degree day basis for the purpose of analyzing its interruptible program because 70 degrees has a greater likelihood to trigger the use of air conditioning, which is a significant contributor to overall load.

C. RESIDENTIAL CYCLING PROGRAM EVENT DETAILS

Pursuant to the Settlement, pp. 6-8 and the 2006 Board Order, p. 15 in Docket No. EEP-02-38, the residential cycling program began operation under new decision rules on June 16, 2006. Accordingly, if one of the following conditions is met the residential participants will be cycled:

1. **Reliability.** To maintain safe and reliable system operations and meet obligations to other interconnected systems.

2. **Temperature Trigger.** Temperatures in the northern, central and southern cycling zones during the afternoon of a non-holiday weekday are projected to be at least 92, 92 and 94 degrees Fahrenheit, respectively.

As noted in Table 2 above, the 2016 summer season was above the 30-year average in cooling degree days. The temperature threshold for appliance cycling was met on three days this past summer. Consequently, two of the zones were cycled during these three days. The approximate potential load reduction impact can be seen in Table 3 below.

Table 3 – 2016 Summer Season Cycling Program Events

Date	Start	End	Time (hrs)	Potential MW	Forecasted High Temperature (°F)			Number of Participating Customers		
					South	Central	North	South	Central	North
10-Jun	1 PM	5 PM	4	4	94	91	91	5,199		
15-Jun	1 PM	7 PM	6	20	95	93	85	5,199	20,825	
21-Jul	1 PM	7 PM	6	16	93	94	91		20,825	

Note: Appliance cycling is divided up into three cycling zones: South (Burlington), Central (Cedar Rapids) and North (Mason City). The cycling threshold for Burlington is 94 degrees, Cedar Rapids is 92 degrees and Mason City is 92 degrees.

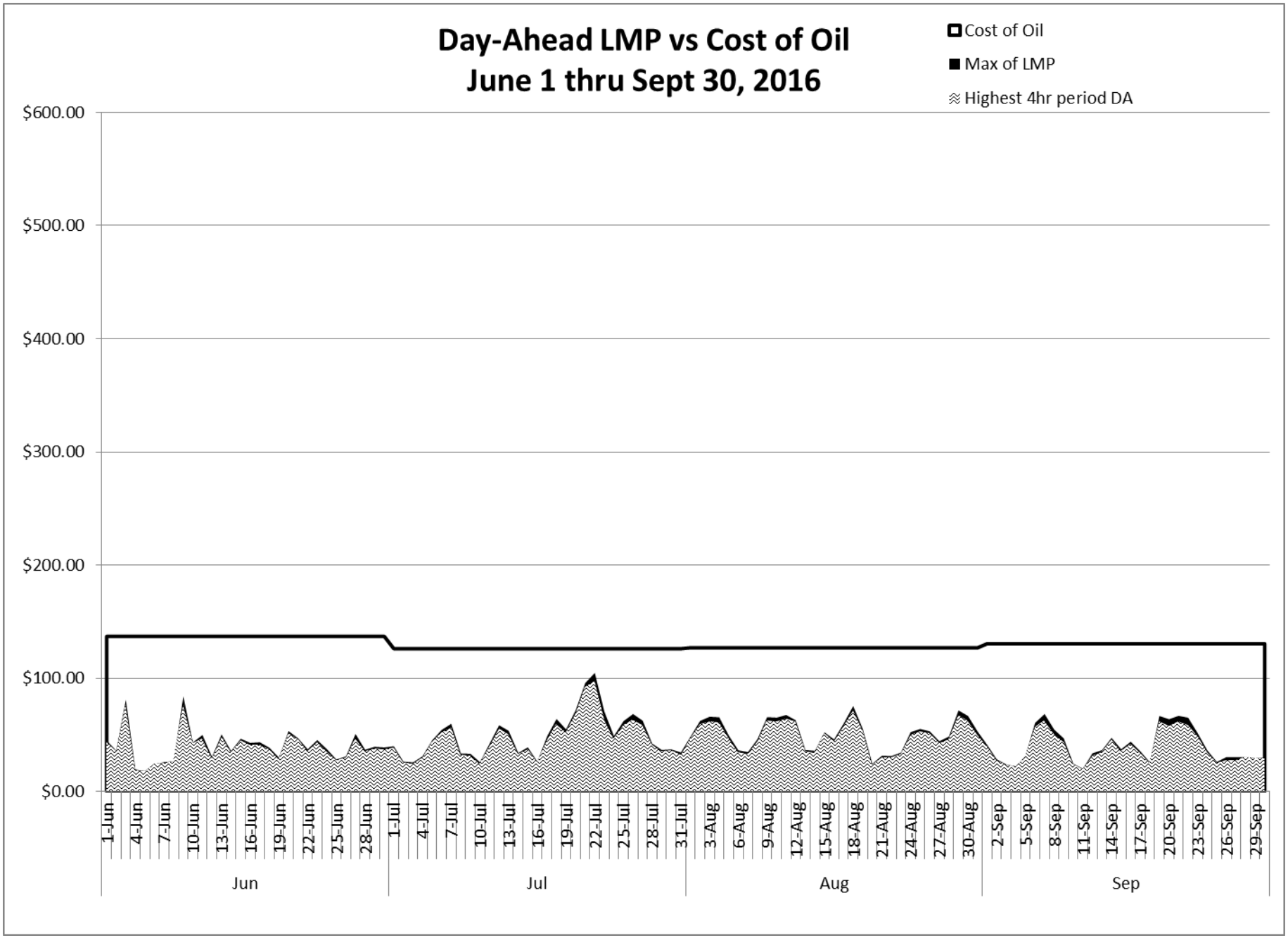
D. REPLICATION OF CHART C-1 AND CHART C-2 USING ACTUAL DATA

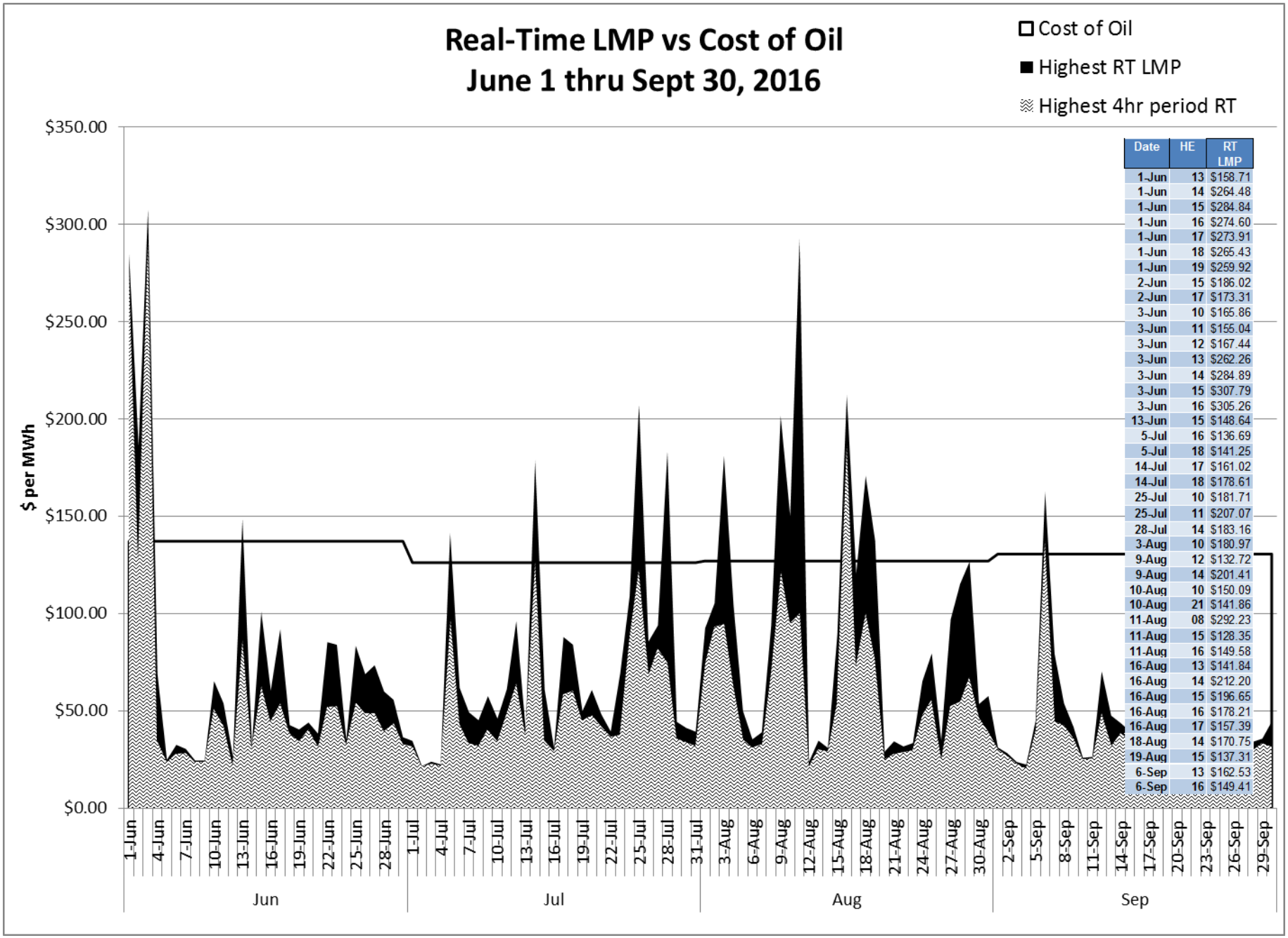
Exhibits 1 and 2 attached use actual 2016 data, but otherwise replicate charts C-1 and C-2 of Exhibit 1 of the Settlement in Docket No. EEP-02-38. The exhibits provide the actual hourly LMP levels in the day-ahead and real-time market for the ALTW.ALTW load zone versus the "running on oil" level of the proxy peaking unit. Actual hourly LMP data in the charts includes the maximum LMP for the day and the highest consecutive four-hour average LMP.

Exhibit 1 addresses LMPs in the day-ahead market. There were zero days when LMP prices exceeded the "running on oil" level for four consecutive hours in the day-ahead market. Exhibit 2 addresses LMPs for the real-time market. There were zero days when the LMP prices exceeded the "running on oil" level.

E. SUMMARY AND CONCLUSION

This report summarizes IPL's eleventh season under the current interruptible and cycling programs. The actual numbers of demand response events for the summer of 2016 were above the previous two years but still below average as far as number of events.


Day-Ahead LMP vs Cost of Oil
June 1 thru Sept 30, 2016
Cost of Oil
Max of LMP
Highest 4hr period DA
$600.00
$500.00
$400.00
$300.00
$200.00
$100.00
$0.00
1-Jun
4-Jun
7-Jun
10-Jun
13-Jun
16-Jun
19-Jun
22-Jun
25-Jun
28-Jun
1-Jul
4-Jul
7-Jul
10-Jul
13-Jul
16-Jul
19-Jul
22-Jul
25-Jul
28-Jul
31-Jul
3-Aug
6-Aug
9-Aug
12-Aug
15-Aug
18-Aug
21-Aug
24-Aug
27-Aug
30-Aug
2-Sep
5-Sep
8-Sep
11-Sep
14-Sep
17-Sep
20-Sep
23-Sep
26-Sep
29-Sep
Jun
Jul
Aug
Sep



Date	HE	RT LMP
1-Jun	13	$158.71
1-Jun	14	$264.48
1-Jun	15	$284.84
1-Jun	16	$274.60
1-Jun	17	$273.91
1-Jun	18	$265.43
1-Jun	19	$259.92
2-Jun	15	$186.02
2-Jun	17	$173.31
3-Jun	10	$165.86
3-Jun	11	$155.04
3-Jun	12	$167.44
3-Jun	13	$262.26
3-Jun	14	$284.89
3-Jun	15	$307.79
3-Jun	16	$305.26
13-Jun	15	$148.64
5-Jul	16	$136.69
5-Jul	18	$141.25
14-Jul	17	$161.02
14-Jul	18	$178.61
25-Jul	10	$181.71
25-Jul	11	$207.07
28-Jul	14	$183.16
3-Aug	10	$180.97
9-Aug	12	$132.72
9-Aug	14	$201.41
10-Aug	10	$150.09
10-Aug	21	$141.86
11-Aug	08	$292.23
11-Aug	15	$128.35
11-Aug	16	$149.58
16-Aug	13	$141.84
16-Aug	14	$212.20
16-Aug	15	$196.65
16-Aug	16	$178.21
16-Aug	17	$157.39
18-Aug	14	$170.75
19-Aug	15	$137.31
6-Sep	13	$162.53
6-Sep	16	$149.41